Training Course on Drug and Therapeutics Committees, Kigali, Rwanda, July 25-29, 2006: Trip Report

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Strategic Objective 5

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About RPM Plus

RPM Plus works in more than 20 developing and transitional countries to provide technical assistance to strengthen drug and health commodity management systems. The program offers technical guidance and assists in strategy development and program implementation both in improving the availability of health commodities—pharmaceuticals, vaccines, supplies, and basic medical equipment—of assured quality for maternal and child health, HIV/AIDS, infectious diseases, and family planning and in promoting the appropriate use of health commodities in the public and private sectors.

Abstract

Drug and Therapeutics Committees (DTCs) serve to improve drug selection, prescribing, and use of medicines in hospital and primary healthcare settings. DTCs also play a major role in decreasing or containing the spread of antimicrobial resistance (AMR). A National Training course on DTCs was conducted in collaboration with the Pharmacy Task Force of the Ministry of Health of Rwanda and the MSH/RPM Plus program of Rwanda with the goal of increasing capacity to manage a comprehensive DTC. The S05 core-funded AMR portfolio of RPM Plus was asked to provide technical assistance and facilitators for the course. Thirty-nine participants from public hospitals, insurance agencies and the ministry of health received training on DTCs and also participated in a hospital field study. This report describes the activities that took place before and during the training course and provides information on post-course follow-up plans.

Recommended Citation

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CONTENTS

ACRONYMS

AMR	Antimicrobial resistance
CAMERWA	Centrale d'Achat des Médicaments Essentiels du Rwanda (Central Store for Essential Medicines, Rwanda)
DTC	Drug and Therapeutics Committee
DUE	Drug Use Evaluation
INRUD	International Network for Rational Use of Drugs
MOH	Ministry of Health
MSH	Management Sciences for Health
RAMA	Rwandaise d'Assurance maladie (Medical insurance for all public workers)
RPM Plus	Rational Pharmaceutical Management Plus Program [MSH]
STG	Standard Treatment Guideline
TOT	Training of Trainers
TRAC	Treatment and Research AIDS Center
USAID	U.S. Agency for International Development
WHO	World Health Organization

BACKGROUND

Infectious diseases continue to present a serious threat to countries worldwide. The situation is compounded by the steadily growing problem of antimicrobial resistance (AMR). Inappropriate prescribing and use of antimicrobials are major contributors to the development of AMR.

The Management Sciences for Health (MSH), Rational Pharmaceutical Management (RPM) Plus Program has been working in developing countries worldwide to introduce Drug and Therapeutics Committees (DTCs) as a method of managing the selection of appropriate drugs and improving use of medicines, including antimicrobials. These committees serve to improve drug selection, prescribing, and use and decrease or contain the spread of antimicrobial resistance (AMR). DTCs are considered a key intervention in the WHO Global Strategy to contain antimicrobial resistance in hospitals.

A former DTC training course participant, Mr. Evans Sagwa, was inspired to organize a training in his hospital in Rwanda after he participated in the recent "International Training Course on Drug and Therapeutics Committees and Training of Trainers" organized by the University of Science Malaysia, RPM Plus and the World Health Organization (WHO) in Malaysia in December 2005.[1] Subsequently, he approached RPM Plus/Rwanda. They decided to leverage resources and asked the S05 core-funded AMR portfolio of RPM Plus to provide technical assistance and facilitators for the course. This resulted in the plan for a national training workshop to increase capacity of health care staff to start and maintain a functional DTC. The Ministry of Health endorsed the training, provided support and sent two representatives to the training.

In Rwanda, only 3 hospitals have a DTC in their institution and these operate with very limited success. There is a need for establishment of more DTCs and to improve the effectiveness of existing committees. In response to this need, a memo of advocacy for the establishment of a National Drug and Therapeutic Committee and hospital level DTCs was developed by the Ministry of Health with technical inputs by RPM Plus/Rwanda (Annex 1). It is expected that the memo will be implemented by the Ministry of Health and that DTCs should be in place in all Referral and District Hospitals in Rwanda.

Purpose of Trip

The purpose of this trip was to conduct a Drug and Therapeutics Committee Training Course in Kigali, Rwanda July 25-29, 2006. This training was conducted in collaboration with the Pharmacy Task Force of the Ministry of Health and the MSH/RPM Plus program of Rwanda. Mr. Terry Green and Mr. Niranjan Konduri visited Rwanda to assist in the organizational, technical and facilitation aspects of the DTC training course.

[1] M. Joshi, N. Konduri, T. Green, O. Duzey, and L. Gibbs. 2006. International Training Course on Drug and Therapeutics Committees and Training of Trainers, Penang, Malaysia, November 28–December 10, 2005: Course Report. Submitted to the U.S. Agency for International Development by the Rational Pharmaceutical Management Plus Program. Arlington, VA: Management Sciences for Health.

Scope of Work

Scope of work for Terry Green

- International facilitator for DTC sessions in the training course
- Assist the organizers in technical aspects of the training course and planning for the hospital field visit
- Develop follow-up strategies for organizers and workplans to assist participants in implementation of DTCs in their facilities
- Provide DTC Training of Trainers sessions for organizers and participants
- Brief and debrief USAID if requested

Scope of work for Niranjan Konduri

- International facilitator for DTC sessions in the training course
- Assist the organizers in technical aspects of the training course
- Assist in organizing and participating in the hospital field visit and help participants collect, compile, analyze and present their data
- Work with Terry Green in developing follow-up strategies

The Request for Country Clearance for Mr. Green's and Mr. Konduri's travel to Rwanda, detailing the scope of work, anticipated contacts, travel and lodging logistics, and funding source, is attached as Annex 2.

ACTIVITIES

Course Preparation

Compared with the standard 12-day DTC-TOT course, the Rwanda course was modified to be presented over a 5-day period. Because of a shortage of healthcare professionals in Rwanda, it was not possible to get key healthcare staff to attend a longer training course. As a result of this shortened version of the course, many sessions were reduced from the usual 2-4 hour length to approximately 1-2 hours. Some of the sessions that are normally presented were eliminated (Infection control and Identifying Drug Use Problems – Qualitative Methods). Additionally, RPM Plus Rwanda requested a new session on HIV medication adherence. Based on existing power point slides from the RPM Plus/HIV Pharmaceutical Management Training, the materials on adherence was developed and adapted for the DTC course.

Participation from in-country stakeholders was solicited as much as possible. Dr. Joseph Ntaganira and Dr. Emile Bienvenue from Butare University and Mr. Leon Fundira from Central Medical Stores of Rwanda (CAMERWA) were involved for the course preparation. Phone conversations were held at least two weeks before the course to brief them about the purpose and scope of the DTC course. PowerPoint slides and participants guides for their respective sessions were sent to them for their review and preparation before the course.

RPM Plus/Washington was asked to create a pre and post test for this DTC course. This gave us an opportunity to develop one specifically for the course in Rwanda. The template that was used for the pre and post test can be seen in Annex 3. Summary of results from the pre-post test can be seen in the evaluation component of this report.

Course Activities

Upon arrival in Kigali, Rwanda, Terry Green and Niranjan Konduri reviewed logistical arrangements, course program schedule, and course materials in collaboration with Antoine Gatera and colleagues from RPM Plus Rwanda. Discussion with Mr. Evans Sagwa, former participant from the International DTC-TOT course, Malaysia was also helpful in preparing for the course and reviewing technical topics such as formulary management and drug safety.

There were thirty-nine participants in the training course and their selection was made to ensure adequate representation from various organizations with even distribution of their professional background. There were 16 physicians, 12 pharmacists, 10 nurses and one administrator. The list of participants is provided in Annex 4. Table 1 displays the breakdown of participants based on type of facility that they represent.

Number of participants	Type of Organization
31	10 hospitals
3	2 from MoH, Pharmaceutical Task Force 1 from Treatment and Research AIDS Center (TRAC)
2	Rwandaise d'Assurance maladie (RAMA); Medical Insurance for all Public Workers
2	MSH/RPM Plus Rwanda
1	National University of Butare, Pharmacy Department

Georges Ntumba, RPM Plus, Senior Resident Advisor welcomed the participants and described the purpose of the course. Antoine Gatera, Senior Technical Advisor provided an overview of the five day course and administered the course pre-test. The five day program was discussed and the schedule can be found in Annex 5. The facilitators for the course included staff from RPM Plus/Washington, RPM Plus/ Rwanda, National University in Butare, King Faisal Hospital and Central Store for Essential Medicines, Rwanda (CAMERWA).

Course presentations consisted of brief presentations, questions/answers and discussion and activities. There was active discussion during all sessions presented which served to improve the learning process.

Terry Green facilitated the sessions on DTC Overview, Assessing Drug Costs, Identifying Drug Use Problems Part II and Drug Use Evaluation (DUE). Mr. Leon Fundira from CAMERWA was involved for the session on Assessing Drug Costs. Niranjan Konduri facilitated the sessions on Formulary Management, Assessing Drug Efficacy, Assessing and Managing Drug Safety, Strategies to Improve Drug Use and Presentation/Facilitation Techniques. Antoine Gatera facilitated the session on Drug Quality. Evans Sagwa facilitated the session on Identifying Drug Use Problems Part I. Dr. Joseph Ntaganira and Dr. Emile Bienvenue from Butare University facilitated the sessions on Adherence and Standard Treatment Guidelines, respectively.

Hospital Field Visit

The hospital field visit is an important activity in the DTC course because it provides an opportunity for the participants to apply the concepts and facts acquired during the training course. At the end of the third day of the training course, Terry Green provided an overview of the hospital field visit and described the data components that were to be collected.

Four public hospitals and one private hospital were chosen for the hospital field study. The four public hospitals were Rutongo district hospital, Muhima district hospital, Kanombe military hospital, and CHUK public hospital and King Faisal private hospital. Participants were grouped equally among these five hospitals. Each group was accompanied by one facilitator who acted as observers and who were available for questions.

Participants were asked to collect data on hospital DTC activities, obtain general consumption and price data for selected classes of medicines, and review the use of medications at the hospital. An instruction sheet was prepared to guide the field visit for each group (Annex 6).

At each hospital, information on the structure, functions, and accomplishments of the hospital DTCs (if it exists in the hospital) was collected through an interview with either the chief pharmacist or the DTC chairperson. Thirty prescriptions were reviewed at the hospital dispensary to analyze the outpatient prescribing patterns using the WHO/International Network for Rational Use of Drugs (INRUD) drug use indicators. An exit interview developed during the course was conducted outside of each pharmacy to determine patients' knowledge concerning their prescribed medications. While at the hospital, participants completed a DUE on ciprofloxacin and reviewed the use of antimicrobials in caesarean section surgical prophylaxis.

After the data were collected in the morning and the participants returned to the training hall, a short session on Presentation and Facilitation Techniques was conducted. This short session aimed to provide an overview on presentation guidelines to the participants and also build capacity for the participants to conduct their own short training sessions. Subsequently, the participants got together to aggregate and analyze their data and then prepare a presentation to share their findings. All the facilitators assisted the participants in developing their presentations and answered participant queries.

Workplans for DTC & Training implementation

A monitoring and follow-up component in the form of a work plan has been built into this training course. This component is intended to help participants implement specific DTC-related activities. The workplan also asked the participant to list their DTC related training plans for their health facility. Workplans were developed during the course and subsequently typed and sent to individual participants. Workplans will be posted on the DTC Web Site at http://erc.msh.org/dtc. An example of one participant's workplan can be found in Annex 7.

Course Evaluations

Participants submitted anonymous written evaluations of each DTC session and an overall evaluation of the DTC course. A Likert scale of 1 to 9 was used in which 1 signified "strongly disagree" and 9 signified "strongly agree." The DTC course sessions received scores ranging from 7.7 to 8.5 (Annex 8), with 11 out of 13 sessions receiving scores of 8.0 or above. At the end of the DTC component of the training course, an evaluation form was distributed to participants asking them to rate and provide recommendations and comments on the DTC course. The overall DTC course evaluation resulted in an average of 8.1 with useful recommendations and favorable comments related to such issues as the course content, depth of topics, and facilitators (Annex 8).

The pre-test was administered before the start of the course and 34 participants returned completed forms. The post-test was administered at the end of the course and 36 participants returned completed forms. The responses from both the pre and post test were compared, analyzed and tabulated and can be seen in Annex 9.

Among the quantitative answers (Table 1, Annex 9) it can be seen that 100% participants agreed in the post test that DTCs have a role in containing AMR compared to 85% in the pre-test. The percent of participants who knew about a formulary system increased from 76.5% in the pre-test to 94% in the post-test. It is also noticeable that following the completion of the training course, 100% of participants stated that they knew how to use information resources to evaluate the efficacy, safety and quality of a drug compared to 38% in the pre-test.

The qualitative responses are tabulated in Table 2, Annex 9. Relatively significant differences among responses between the pre and post test are highlighted in bold. A summary of the qualitative analyses comparing post-test responses with pre-test is given below.

- In the post-test, 13 participants stated that a procurement representative must be part of the DTC compared to only one in the pre-test. Likewise, 15 participants felt that their hospital administration must be part of the DTC compared to only 2 in the pre-test.
- In the question on important functions of a DTC, 15 participants stated "development of a formulary list" compared to 4 in the pre-test. Six participants stated "educate and train prescribers on avoidance of antibiotic resistance" compared to 1 respondent in the pre-test.
- Regarding strategies to deal with problems of antibiotic use, 12 participants stated "regular training/education/sensitization for prescribers on standards of rational antibiotic use" compared to 4 in the pre-test. Six participants stated "perform drug use evaluation" compared to one in the pre-test.
- It is clear that many participants identified important factors such as safety, need and quality for evaluating a drug before adding it to the formulary.
- Regarding adherence, 21 participants stated that health providers don't provide information to patients compared to 14 in the pre-test
- Eight participants stated "patient loses trust/confidence in the hospital" compared to three in the pre-test regarding the consequences of using poor quality drugs.

In conclusion, pre-tests and post-tests were given to all of the participants that included true/false type questions as well as open ended questions to assess the knowledge levels of the participants before and after the training course. From the quantitative and qualitative analysis described above, it is indicative that there was significant improvement in knowledge in the majority of the participants as a result of the 5 day DTC training course. The pre and post test will be refined for future DTC courses as needed.

Materials Distributed

The DTC course materials are supported by well-developed and extensive sets of teaching-learning materials—participant's guides, trainer's guides, and visual aids. At the start of the DTC training, each participant received a printed set of the PowerPoint slides used by the facilitators. During the workshop, facilitators also distributed additional useful technical handouts related to the course. At the end of the course, each participant received a CD-ROM containing electronic versions of the complete set of DTC course materials developed by MSH/RPM Plus with support from the U.S. Agency for International Development (USAID). The CD contained additional technical materials on DTC and rational medicine use. Also, WHO provided a number of relevant texts, documents, and CD-ROMs that were made available to all participants.

NEXT STEPS

Immediate Follow-up Activities

Training coupled with regular follow-up and monitoring results in more positive outcomes than training alone. It will therefore be necessary to support participants in their setting for application of lessons learned and for the implementation of workplans that they developed. The follow-up will be locally led by Antoine Gatera from RPM Plus Rwanda in collaboration with the core-funded AMR portfolio of RPM Plus.

The follow-up and support plan, for next year will essentially consist of the provision of technical guidance and advice, encouragements to participants, review of products they develop (for example: ABC/VEN Analysis, prescribing indicators, etc), encouragement to share experiences between participants and in the assessment of implementation of their workplans. This follow-up will be made through a continuous and regular contact with participants by telephone calls, emails and by field visits in their hospital settings.

Recommendations

- Provide regular technical assistance to RPM Plus Rwanda for their DTC implementation activities and for follow-up with participants

- Update DTC Website with participant workplans.

ANNEX 1: MEMO TO MINISTRY OF HEALTH ON CREATION OF DTCS

MEMO ON THE CREATION OF DRUG AND THERAPEUTICS COMMITEES AT HEALTH FACILITIES AND A NATIONAL PHARMACEUTICAL AND THERAPEUTICS COMMITTEE.

(translation from the original document written in French)

I. Introduction.

The Rwandan Government considers the sector of health as a means to an end in the process of development. Investment in health constitutes an essential factor of development because it improves the well being of the population and thus contributes to the increase of production and the reduction of poverty in the framework of good governance[1].

The regular and continuous supply of essential drugs being a determining factor of the state of the national medical system, the National Pharmaceutical Policy has as a main objective to contribute to the improvement of public health by making drugs available and accessible both geographically and financially. These drugs must also be effective, of guaranteed quality, and be rationally used by the prescribers, dispensers and patients.

The financing strategies of the health sector stress the **supply of essential drugs** and the **promotion of their rational use** which constitutes one of their key points, since the other components will remain ineffective if the essential drugs are badly prescribed by the health agents and/or misused by the population. Indeed, the irrational use of drugs leads not only to a waste of resources which are already limited in the country and for private individuals, but can also lead to a therapeutic failure and/or other medicinal complications such as intoxication and resistance.

The objective of this document is to suggest the creation of the National Pharmaceutical and Therapeutics Committee (NPTC) and of Drugs and Therapeutics Committees (DTC) at health facilities level.

The NPTC and DTC will constitute multidisciplinary discussion and dialogue forums for the implementation of the strategic plans aimed at the reinforcement of the rational use of drugs, in order to ensure good quality of health services in the country in general.

[1] Politique du Secteur Santé, Gouvernement du Rwanda, Février 2005, p.9, 3.2

II Current situation of the rational use of drugs.

II.1. Strengths:

There is a political will to set up a more coherent system in regards to rational use of drugs. Several pharmacists participated in regional or international workshops on the creation and the functioning of national pharmaceutical and therapeutic committees.

Some specific programs from the Ministry of Health (Malaria, Tuberculosis, STD, HIV/AIDS...) developed activities in connection with the standardization of treatments and promotion of the rational use of drugs. Their experience would constitute a priceless contribution in the creation of the considered committees.

II.2. Weaknesses:

The study on the pharmaceutical sector carried out in May 2003 by the Ministry of Health in collaboration with the WHO revealed the following anomalies regarding the use of drugs[2]

- Excessive use of antibiotics
- Considerable use of injections
- Non-conformity with protocols of standard treatments
- A considerable contradiction of prescriptions in DCI and on the LNME
- Ignorance of dosage from patients
- The absence of the LNME in the majority of medical formations
- Lack of a national plan to rationalize use of drugs

An evaluation carried out by MSH/RPM Plus[3] noted that only 40% of the visited medical facilities had a system of recording for administered prescriptions, 5% with a system of supervision for the dispensation of drugs, and only 9% with a system of follow-up for the use of drugs by the patient.

However, the existence of follow-up and evaluation mechanisms remains an important element for the identification of problems and development of strategies which can lead to a rational use of drugs.

[2] Etude du Secteur Pharmaceutique, Minisanté&OMS, Kigali, mai 2003, p.35.
[3] Lijdsman, C., Onyango.C. et Al.Assessment of Health Commodity Supply Sector in Rwanda, September 2003, submitted to the U.S Agency for International Development by the Rational Pharmaceutical Management Plus Program.Arlington, VA : Management Sciences of Health, 2004, p.19,20,30.

II.3. Perspectives

The creation of an institutional framework manifesting the operational expression of the political will with regards to rational use of drugs and materialized by the creation of the National Pharmaceutical and Therapeutics Committee and Drugs Therapeutics Committees at the level of the medical formation.

III. The Creation of the Pharmaceutical and Therapeutics Committees

III.1. Definition and Role of the PTC:

The promotion of the rational use of drugs requires joint efforts at all levels of the health care system. At the national level, it proves to be essential to design policies, to work out guidelines and to develop suitable strategies with an aim of standardizing criteria for an adequate use of drugs. The implementation of policies decided through the execution of the agreed guidelines and the adopted strategies requires adhesion and the support of all the professionals of health in their daily activities

For this reason, a National Pharmaceutical and Therapeutic Committee will be created at the national level and will be used as supreme consultative body in regards to rational use of drugs and will play the role of leadership with respect to the Drug and Therapeutic Committees which will be created at the level of each health care institution.

The Drug and Therapeutic Committees thus constitute institutional frameworks gathering multidisciplinary professionals of the national health system, having as main mission the improvement of the rational use of drugs at the various levels of the national health system.

They will play, according to cases, an advisory; educational and formative roles; a support and coordination role; and follow-up and evaluation roles.

They will fulfill in particular the following functions:

A. Administrative Functions.

- To facilitate a good coordination between all stakeholders;
- To participate in the restricted selection of the essential drugs by level and to revise it periodically;
- To strengthen the availability of essential drugs to the health facilities;
- To contribute to the development and the update of management and drug use policies;
- To provide health agents with necessary and simple tools to use;
- To introduce treatment flowcharts and standard treatments guideline based on a list of health problems per level and the list of the corresponding essential drugs through the design and/or the revision of a national form;
- To strengthen a policy of price of drugs this supports the less expensive essential drugs;
- To promote prescriptions in generic names for all sectors;
- To provide simple insert for use of drugs for the consumer;

- To better control the dispensing of drugs on prescription.

B. Educational Functions.

- To improve the access to objective information,
- To improve the supervision of the prescribers,
- To train the supervisors at the district and regional level
- To adapt the professionals curricula to the concepts of essential drugs and rational use,
- To support the creation and activities of the National Pharmaceutical Information and Pharmacovigilance Center,
- To develop simple educational materials for the population,
- To organize the consciousness-raising campaigns;
- To integrate the media in an IEC campaign.

C. Operational research functions

- To collect data on the use of drugs in all sectors,
- To identify the population and the health provider needs,
- To evaluate the impact of the program of promotion and rational use.

III.2.Composition NPTC

A. National Pharmaceutical and Therapeutics Committee.

This committee will be made of health professionals among which representatives of the following institutions and organizations and will be set up by ministerial order:

- Pharmacy Unit ;
- Planning and Research Unit ;
- Health care Unit ;
- Camerwa ;
- Bufmar ;
- One lecturer for the Department of Pharmacy from the NUR;
- One lecturer for the Faculty of Medicine from the NUR;
- One representative from the Rwanda Pharmacist Association;
- One representative from the Rwanda Physician Association;
- One representative from the Rwandan Paramedical Association;
- One representative from TRAC Plus ;
- One representative from the National Reference Laboratory.

B. Drug and Therapeutics Committees.

These committees will be set up by the steering bodies of health facilities in association with the National Pharmaceutical and Therapeutics Committee. The members will be appointed according to the job positions and/or the responsibilities entrusted within FOSA. The number of the members will be defined proportionally with the category of each FOSA.

In the majority of heath facilities, DTC are made up as follows:

- One representative from each specialized medical service of health facility ;
- One pharmacologist when available;
- One representative from the nursing department;
- One representative from the pharmacy department;
- One representative from the administration and finance department;
- One representative from the laboratory department;

Other members could be appointed according to their personal expertise (specialists in pharmaceutical information, in quality assurance, or a representative from the associations of consumers)

III.3. Functioning of NPTC and DTC

III.3.1. Basic Principles

To ensure an optimal functioning of NPTC and DTCs, their creation must be guided by the following essential principles:

A. Multidisciplinary approach.

NPTC and DTCs will include staffs from the various professions of the health sector having various experiences and knowledge, various skills and competences. DTC requires the broadest possible representativeness to assure a proper adhesion with the decisions taken.

B. Transparency.

NPTC and DTCs success will considerably depend on the active and regular manner directed towards an important decision-making and characterized by the most total and possible transparency of which they will have performed their tasks. The DTC members will have to be people of high morality and professional ethics.

C. Technical Skills.

These committees will have to be technically qualified in order to hold suitable and essential discussions for a decision-making well adapted for the promotion of the rational use of drugs with respect to all the target groups. The scientific approach with evidence in support will be used as a basis for all the decisions of the PTC.

D. Firm Political Support.

The political will from the government, the Ministry of Health and of all the other stakeholders from the sector will be necessary to reach a consensus on the decisions from the PTC and furthermore, on its broad application. The support from authorities will also be necessary for the financing of the various activities of the PTC

III.3.2 Follow up and Evaluation:

Structural Indicators:

- Official document instituting the PTC
- Reports of the constituent meetings
- Regulation texts

Performance Indicators:

- Reports of regular meetings
- Number of studies carried out and financed
- Reports of any other action undertaken within the frame of their mission

Indicators at the national level:

- Availability of the updated list of essential drugs
- Availability of the national formulary

Indicators at the FOSA level:

- Percentage of health institution having the list of essential drugs and the national formulary in the room of consultation
- Percentage of essential drugs available at FOSA

Quality Prescription Indicators:

- Average number of drugs per prescription
- Percentage of prescribed drugs in generic forms in the public sector, registered & private
- Percentage of prescriptions with any antibiotics
- Percentage of prescriptions with any injectables
- Percentage of drugs prescribed from the list of essential drugs
- Percentage of prescriptions in accordance with the standard treatments

Indicators of care to the patients.

- Average duration of consultation
- Average duration of dispensation of drugs
- Average cost of prescription

Indicators at the population level

- Percentage of patients taking drugs after the consultation
- Percentage of patients taking of drugs without consultation (self-prescription of drugs)
- Percentage of treatments received in a FOSA
- Percentage of treatments received in a pharmacy or pharmaceutical counter
- Percentage of drugs obtained in parallel market

III.3.3. Institutional Support

A material, financial and technical support is essential to ensure not only the continuation of the objectives for the promotion of rational drug use of the concerned services from the Ministry of Health but more especially for the good functioning of PTC at all levels

A financial and material support will be ensured by the Ministry for Health for the NPTC and by the health facility for the DTC.

The WHO and the international NGOs (MSH) working in the pharmaceutical sector will be requested to provide a technical support.

IV. Conclusion

The NPTC and the DTC constitute a suitable framework and strategy for the promotion of the rational drug use, which has already proved its reliability everywhere it was established.

The Ministry for Health should accelerate their creation in order to support the already declared policy on the promotion of the rational use of drugs.

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ANNEX 2: REQUEST FOR COUNTRY CLEARANCE

TO: John Dunlop, PHN Officer
Christian Fung, Manager PEPFAR Portfolio
Randolph Augustin, Coordinator PEPFAR Clinical Projects
Jennifer Rubin, HIV/AIDS Health Specialist
Patricia Mwanuyera, SO2 Secretary, USAID/Rwanda
Rose Ntirandekura, USAID Program Assistant

FROM: Management Sciences for Health (MSH)/Rational Pharmaceutical Management (RPM) Plus Program, Cooperative Agreement # HRN-A-00-00-00016-00

SUBJECT: Request for Country Clearance for travel to Rwanda for RPM Plus staff: Terry Green and Niranjan Konduri

COPY: Anthony Boni, GH/HIDN/HS, CTO RPM Plus
Kama Garrison, Pharmaceutical Management Advisor, GH/HIDN
Douglas Keene, Director, MSH/RPM Plus
Maria Miralles, Deputy Director, MSH/RPM Plus
Mohan Joshi, Program Manager/AMR, MSH/RPM Plus
Michael Gabra, Program Manager/Africa, MSH/RPM Plus
Georges Ntumba, Senior Resident Advisor, MSH/RPM Plus/Rwanda
Antoine Gatera, Senior Technical Advisor, MSH/RPM Plus/Rwanda

1. The RPM Plus Program wishes to request country clearance for proposed travel to Kigali, Rwanda for: Mr. Terry Green, Senior Program Associate for RPM Plus and Mr. Niranjan Konduri, Program Associate for RPM Plus, for the period of July 21 to July 31, 2006.

2. **Background:**
   Infectious diseases continue to present a serious threat to countries worldwide where scarcity of resources is complicated by lack of drug availability and inappropriate use of the available drugs. The situation is compounded by the steadily growing problem of antimicrobial resistance (AMR). Inappropriate prescribing and use of antimicrobials are major contributors to the development of AMR. The Rational Pharmaceutical Management (RPM) Plus Program of Management Sciences for Health (MSH) has been working in developing countries worldwide to introduce Drug and Therapeutics Committees (DTCs) as a method of managing the selection of appropriate drugs and improving use of medicines, including antimicrobials. These committees serve to improve drug selection, prescribing, and use and decrease or contain the spread of antimicrobial resistance (AMR). DTCs are considered a key intervention in the WHO Global Strategy to contain antimicrobial resistance in hospitals.

The Ministry of Health (MoH) of Rwanda will host a national training workshop on Drug and Therapeutics Committees from July 25 to 29, 2006, in Kigali, Rwanda. This course is being organized by the Ministry of Health, Pharmaceutical Task Force of Rwanda in collaboration with MSH/RPM Plus. A former DTC training course participant, Mr. Evans Sagwa, was inspired to organize a training in his hospital in Rwanda after he participated in the recent "International Training Course on Drug and Therapeutics Committees and Training of Trainers" organized by the University of Science Malaysia, RPM Plus and WHO in Malaysia in December 2005. Subsequently, he approached RPM Plus/Rwanda who decided to work with the MoH and this resulted in a plan for a national training workshop to ensure a critical mass of trained healthcare staff in DTC concepts.

3. **Purpose of Proposed Visit**
   The purpose of the visit for Mr. Terry Green and Mr. Niranjan Konduri is to assist in the technical and facilitation aspects of the Drug and Therapeutics Committees training course to take place at the Hotel Novotel Umubano in Kigali, Rwanda, from July 25 to July 29, 2006.

4. **Scope of Work**
   Scope of work for Terry Green
   - International facilitator for DTC sessions in the training course
   - Assist the organizers in technical aspects of the training course and planning for the hospital field visit
   - Develop follow-up strategies for organizers and workplans to assist participants in implementation of DTCs in their facilities
   - Provide DTC Training of Trainers sessions for organizers and participants
   - Brief and debrief USAID if requested

   Scope of work for Niranjan Konduri
   - International facilitator for DTC sessions in the training course
   - Assist the organizers in technical aspects of the training course
   - Assist in organizing and participating in the hospital field visit and help participants collect, compile, analyze and present their data
   - Assist Terry Green in developing follow-up strategies

5. **Anticipated Contacts:**
   - MSH/RPM Plus Staff
   - USAID Rwanda
   - Mr. Evans Sagwa, King Faisal Hospital, Rwanda (Malaysia DTC course participant)
   - Ministry of Health and Treatment & Research AIDS Center (TRAC) staff

6. **Logistics**: Mr. Green and Mr. Konduri will arrive in Kigali on/about July 22, and depart from Kigali on/about July 31, 2006. They will stay at Novotel Umubano Hotel.

   No Mission assistance is required.

7. **Funding**: Expenses for Mr. Green and Mr. Konduri will be paid for with RPM Plus SO5 AMR funds.

8. **Action**: Please inform the RPM Plus Program whether country clearance is granted for the activity to take place as proposed. Please reply via e-mail to the attention of Anthony Boni, USAID/G/PHN/HN/HPSR, e-mail address: aboni@usaid.gov and Kama Garrison at kgarrison@usaid.gov, tel (202) 712-4789, fax (202) 216-3702. Please send carbon copies to Douglas Keene at dkeene@msh.org, Maria Miralles at mmiralles@msh.org, Michael Gabra at mgabra@msh.org, Mohan Joshi at mjoshi@msh.org, Georges Ntumba at gntumba@msh.org, Lindsay Gibbs at lgibbs@msh.org and Luce Caries lcaries@msh.org.

ANNEX 3: TEMPLATE FOR PRE & POST TEST

National Training Course on
Drug & Therapeutics Committee and Training of Trainers
Kigali, Rwanda
July 25 to July 29, 2006

Please complete this questionnaire completely to the best of your knowledge.

1	What is the structure of a drug and therapeutics committees (DTCs)? Who are the members?		
2	List important functions of a DTC 1) _____ 2) _____ 3) _____ 4) _____		
3	DTCs can play a role to contain antimicrobial resistance (AMR)	False	True
4	What kind of strategies can a DTC use to improve drug use when there are problems with overuse of antibiotics?		
5	A formulary is a list of drugs approved for use in the health care system by authorized prescribers	False	True
6	Prescribing indicators cannot be used to identify problems in drug use	False	True
7	Do you know how to use information resources to evaluate the efficacy, safety and quality of a drug	Know	Don't know

8	What are the important factors to evaluate when adding a new drug to the formulary or Essential Drug List (EDL)?		
9	Can a DTC play an important advisory role in assuring procurement of drugs of appropriate quality?	No	Yes
10	Name 3 reasons why patients do not take their medication regularly or correctly 1) _____ 2) _____ 3) _____		
11	What are some consequences of using poor quality drugs at your hospital?		
12	What is the difference between a counterfeit drug and a substandard-drug?		
13	Can a DTC play an important advisory role in assuring procurement of drugs of appropriate quality?	No	Yes
14	Can an algorithm be used to detect the causality of an adverse drug reaction?	No	Yes
15	What are 2 important criteria when setting up Drug Use Evaluation for ceftriaxone?		

ANNEX 4: PARTICIPANT LIST

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ANNEX 5: COURSE SCHEDULE

NATIONAL TRAINING COURSE ON DRUG AND THERAPEUTICS COMMITTEES

July 25-29, 2006
Kigali, Rwanda

July 25

Time	Session	Facilitators
8:00–8:30	Arrival & Registration of participants	MSH
8:30 – 9:00	Opening ceremony	Antoine Gatera
9:00 – 10:00	Orientation Session: Welcome, introductions, purpose and objectives & Pre-Test	Antoine Gatera
10:00 -10:30	TEA BREAK	
10:30- 11:30	Introduction to DTC overview I	Terry Green
11:30–12:30	Introduction to DTC overview II	Terry Green
12:30-14:00	LUNCH	
14 :00–15:30	Principles of Formulary Management	Niranjan Konduri
15 :30–16:00	Assessing Drug Efficacy	Niranjan Konduri
16 :00-16-15	TEA BREAK	
16 :15-17 :30	Assessing Drug Efficacy Part II, Practical Example	Niranjan Konduri

July 26

8:30–10:30	Assessing and Managing Drug Safety (Pharmacovigilance)	Niranjan Konduri
10:30 -10:45	TEA BREAK	
10 :45-11 :45	Drug Quality	Antoine Gatera
11 :45-12 :30	Drug costs	Leon Fundira Terry Green
12:30–14:00	LUNCH	
14:00–15:30	Identifying Drug Use Problems, Part I	Evans Sagwa
15:30–15:45	TEA BREAK	
15:45–17:30	Identifying Drug Use Problems, Part II	Terry Green

July 27

8:30–10:00	Strategies to Improve Drug Use-Overview	Niranjan Konduri
10 :00-10 :15	TEA BREAK	
10:15–12:30	Standard Treatment Guidelines Practical Example	Dr. Emile Bienvenue
12:30–14:00	LUNCH	
14:00–15:30	Drug Use Evaluation	Terry Green
15:30-15:45	TEA BREAK	
15:45-16:45	Adherence	Dr. Joseph Ntaganira
16:45-17:30	Field Study Introduction	Terry Green

July 28

7:30-12:30	Field Study	Antoine Gatera Evans Sagwa Niranjan Konduri Terry Green
12:30–14:00	LUNCH	
14:00-15:30	Training of Trainers: Presentation/Facilitation Techniques	Niranjan Konduri Terry Green
15:30–16:00	Tea Break	
16:00-18:00	Field Study Analysis and Presentation Preparation	Antoine Gatera Evans Sagwa Niranjan Konduri Terry Green
19:00	Dinner	

July 29

8:30–10:30	Field Study Presentations	Terry Green
10 :30-10 :45	TEA BREAK	
10:45–11:45	DTC Workshop Summary	Niranjan Konduri Antoine Gatera Terry Green Evans Sagwa
11 :45-12 :30	Next Steps and Workplan Development	Antoine Gatera Terry Green
12:30–14:00	LUNCH	
14:00–15:30	Workplan Development	Terry Green
15:30-15:45	Tea Break	
15:45-16:30	Post Test and Evaluation	
16:30-17:00	Closing Ceremony	Antoine Gatera

ANNEX 6: HOSPITAL FIELD VISIT GUIDELINES

National Training Course on
Drug & Therapeutics Committee and Training of Trainers
Kigali, Rwanda

Hospital Field Visit Guidelines

In the morning you will visit a hospital for field visit. At the hospital, please do the following:

1. After introducing yourself to the hospital administration, meet with the Chief Pharmacist and/or Chairperson/Secretary of the hospital's Drug and Therapeutics Committee.

   - If a DTC exists, obtain a description of the DTC composition and functions. (If no DTC find out who would be responsible for decisions concerning formulary list and procurement).

     - Who are the members of the DTC?
     - How often does the DTC meet?
     - What activities does the DTC carry out?
     - How is the formulary list updated?
     - What have been its achievements in 2005-2006?

   - Determine whether formal agendas are prepared for the meetings.

     - Ask to see the agendas on file.
     - Request permission to review the minutes of the past one or two meetings.
     - Determine what topics have been discussed.

2. If the DTC is charged with updating the hospital drug formulary list, ask for a copy of the drug evaluation report.

   - What is the format and content of the report?

(*Note:* Plan to spend a maximum of 15 minutes for questions 1 and 2.)

3. Ask the DTC to see any drug studies that are intended to identify drug use problems in the hospital. These might include:

   - ABC analysis
   - Drug Use Evaluation or Drug Utilization Review studies
   - Drug indicator studies
   - Qualitative studies to identify why drug use problems occur

4. Inquire about interventions to improve drug use. Do they utilize any education programs to improve drug use, standard treatment guidelines or protocols, drug use evaluation, regulatory interventions, or others?

5. Ask for a copy of the hospital drug formulary list.

   - How many drugs are on the list?
   - How many different chemical entities are there?
   - Prepare a list of all third generation cephalosporins and non-steroidal antiinflammatory drugs (NSAIDs)

6. Ask the Chief Pharmacist to provide the following information:

   - Unit price (acquisition price) of each drug in the following therapeutic categories: (1) third generation cephalosporins, (2) NSAIDs (get information for each drug product - for example, each brand of the same drug) and (3) Antihypertensives

   - Quantities of each drug that were consumed for the past 12 months (each brand of the same drug, if possible)

   - Total of **all** drug expenditures for the previous 12 months.

7. Ask the Chief Pharmacist the following questions:

   - Is there a drug information center?
   - Does the drug information center or pharmacy department produce a newsletter or drug bulletin? What information does it provide?
   - What drug information resources are available for the DTC?

     - Reference texts (for example, Martindale, Meyler's Side Effects of Drugs, USP DI, AHFS Drug Information, etc.)
     - Drug bulletins (for example, The Medical Letter, Drug and Therapeutics Bulletin, national drug bulletin)
     - Journals (for example, Annals of Pharmacotherapy, Journal of the American Society of Health-System Pharmacists, Drugs)

8. Review 15 charts of in-patients (from medical records) that have been prescribed ciprofloxacin. Review these charts and collect the data that is listed on your DUE form.
9. Review 15 charts of patients (from medical records) with the diagnosis of Cesarean Section delivery. Collect and record the data on the Cesarean Section DUE form.

10. At the Pharmacy: Evaluate 20 prescriptions for:

    - Prescribing Indicators:
        - # of drugs per prescription
        - % of prescriptions with antibiotics
        - % of prescriptions with injections
        - % of drugs prescribed by generic names
    - Patient Care Indicator
        - Observe dispensing time (secs/min)

11. Outside the hospital compound: Conduct patient exit interviews

    - Use the form developed on July 27
    - Try to interview a minimum of 10 and a maximum of 20 exiting patients.

On Friday afternoon, you will analyze the collected information and prepare a 10-15 minute presentation for Wednesday morning. The presentation should include:

- A brief presentation on the status of the DTC in the hospital that you visited.
- An analysis of the hospital drug evaluation process for additions to the formulary and report.
- An analysis of the three therapeutic groups utilizing data you collected at the hospitals.
- ABC analysis of all formulary items (if possible).
- Analysis of the charts reviewed by your group for the ciprofloxacin DUE and Cesarean Section antibiotic prophylaxis DUE form (appropriate drug, dose, duration, timing and cost saving if appropriate drugs are used.). Compare the drugs used in the chart reviews to the standard treatment guideline recommendation and to the DUE developed during the course.
- Analysis of prescribing indicators and exit interviews.
- What potential problems have you identified?
- What would you recommend to do about the problems?

Important Note:
Facilitators are only there as observers, do not rely on them for moving the process.

ANNEX 7: SAMPLE OF DTC & TRAINING WORKPLAN DRAFTED BY PARTICIPANT

National Drug & Therapeutics Committee (DTC)
Training Course
July 25-July 29, 2006

Part A: Workplan for DTC Implementation

and

Part B: Workplan for DTC related training/presentation activity

Name: _____FUREHE MUHOZE Nathalie _____

Hospital: _____Kibagabaga_____

Now that you completed the National DTC Training Course, what is your goal?

Goal: _____To participate in the implementation of a DTC in the Hospital____

Part A: Workplan for DTC Implementation (for September, 2006 to October, 2007)

Activity 1: To establish a DTC			
Detail/List each step that you will take to complete Activity 1	Completion Date/Timeline	Completed? Y/N	Notes
To write , present the training report and explain to the management of the Hospital the need to establish a DTC	October 06		Nathalie
Identification of members for the DTC	December 06		Nathalie. Kibagabaga is a new hospital and the recruitment process of all the staff is still ongoing
Organize a awareness meeting with those members to explain the need of establishing a DTC within the Hospital	January 07		Nathalie and the Management of the Hospital
To appoint the member of the committee organize the first meeting of the committee	February 07		Nathalie and the Management of the Hospital

Activity 2: To develop a Formulary list for the Hospital			
Detail/List each step that you will take to complete Activity 2	Completion Date	Completed? Y/N	Notes
To prepare a draft of formulary list	July 07		Nathalie and a group of DTC Members
To submit the draft to the members of the DTC for review and comments	August 07		Nathalie and a group of DTC Members
To adopt the final document	September 07		The DTC
Editing and distributing the formulary list	October 07		The DTC

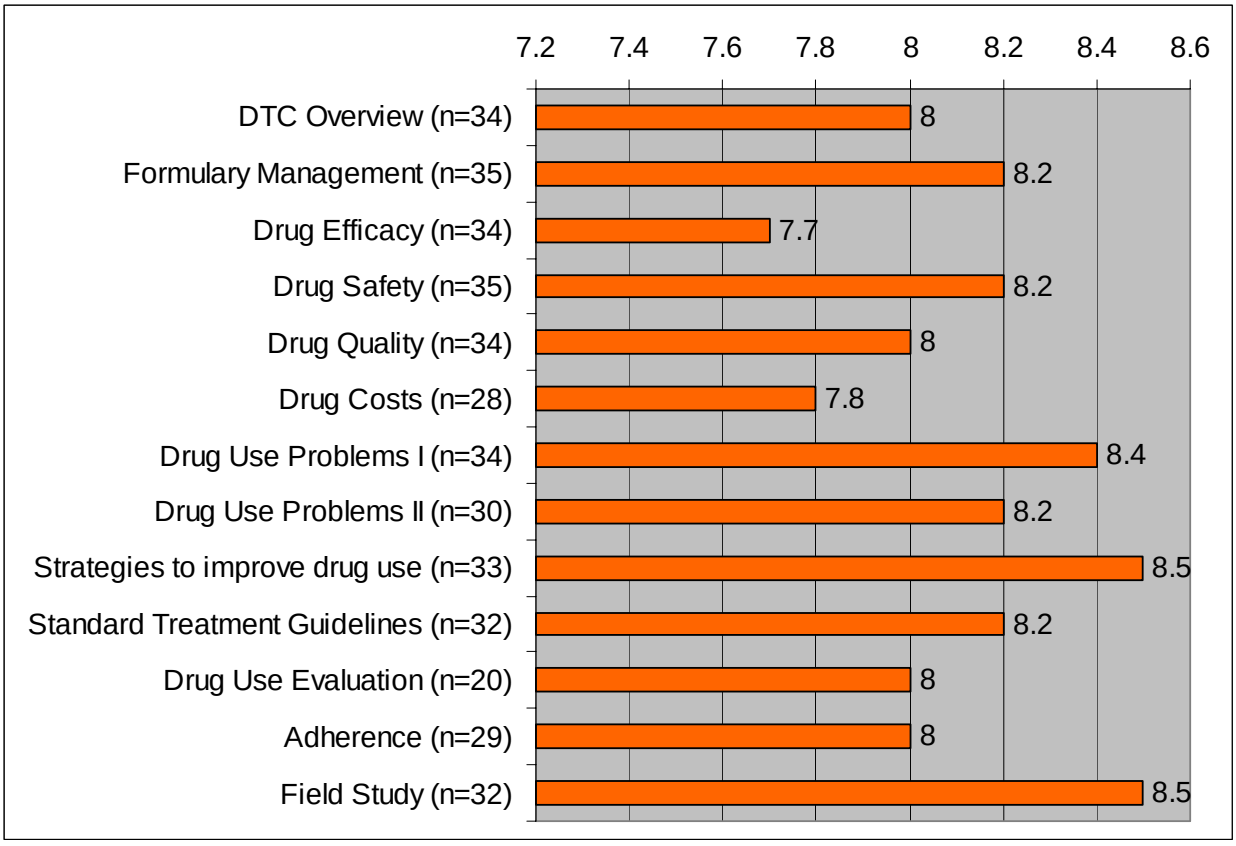
<u>Part B</u>: Workplan for DTC related Training/Presentation Activity
(for September, 2006 to October, 2007)

Activity 1: To train the members of the DTC			
Detail/List each step that you will take to complete Activity 2	Completion Date	Completed? Y/N	Notes
To organize the logistic for the training : venue and finances	March 07		Nathalie and a group of DTC Members
To develop training materials and identify facilitators	March-April 07		Nathalie and a group of DTC Members
To organize a training for the member of the DTC	May 07		

ANNEX 8: COURSE EVALUATIONS

PARTICIPANT EVALUATION OF DTC COURSE
Individual Session Ratings

Scale: 1 = strongly disagree; 9 = strongly agree



Overall DTC Training Course Evaluation

		(scale of 1–9)*
Content		
The objectives were clearly defined at the beginning of the training course		8.4
The defined objectives were achieved by the end of the training course:		8.5
The amount of material covered during the course was appropriate:		8.2
The depth of coverage of the material in the training course was appropriate:		8.5
How useful will the knowledge and skills obtained in this course be to my work?		8.7
Facilitators/Trainers		
Overall, I would say the quality of the facilitation was:		8.3
Overall Opinion		
This course was valuable and I will recommend it to my colleagues:	yes	35
	no	0
Overall Satisfaction with Training Logistics		
The pace of the course:		7.5
The style and format of the sessions:		7.9
The instructional materials:		8.3
The length of the training course:		7.1
Overall Score for DTC Course		**8.1**

Recommendations for Improving Training Course

Given below is a summary of participant feedback grouped under various sub-headings.

DTC course related

- Organize another training with the same group as a continuity of the course
- Make more details because the course look like a summary
- Save more time to workplan development as this is important
- Have a follow on training and evaluation of this particular group
- More practical examples
- Give more time to the activities and field visit (4)
- Involve more the administrators as well to get acquainted with DTC's which are useful in health care delivery
- Involve also other medical and paramedical staff
- Regular DTC trainings needed in the country to improve our health care delivery and benefits
- Update regularly the course and participants (follow up)

- If possible it should conducted though out the country
- To train other people in our hospital; Involve other hospitals
- Keep the contact with various DTCs
- Respond quickly to DTCs solicitations after the course

DTC course scheduling aspects

- This course is very important and very interesting so it should given more time (3)
- Training time was short; next time add more time (4)
- Giving its quality and importance, it needs to be longer than five days
- Many items in a short time, I think the training must have more time,
- Increase in duration i.e. more days needed for the course to avoid speeding to new topics without thorough understanding the of the first topic (Avoid crash program)
- Two weeks training would be ok (2)
- Have the training out of the city so that participants may concentrate fully
- No sessions on Saturday (6)
- Venue was not comfortable - next time look for a better venue (3)
- Make sessions shorter or increase more days

Other Feedback

- I am satisfied, it was excellent
- Very good course keep it up and a big thanks
- Have the printed materials in both English and French (2)

Additional comments

- This course will help us perform beyond expectations in our hospital's accreditation program
- This should be addressed even set the other levels of health care professionals
- I really enjoyed the course and I am thankful to all facilitators.Do come again
- If possible it should be done 4 times per year
- It was well organized, very practical, and some people improved their English
- Please give us more courses and more information as it helps us to be more helpful to our population
- Maintain a regular DTC Training
- Make all material French versions available as soon as possible, so that French speaking can follow easily
- More emphasis needs to be put to the Ministry of Health for monitoring of implementation of DTCs
- Very nicely involved diversified trainers/facilitators
- Thanks to all facilitators

ANNEX 9: PRE AND POST TEST RESULTS

TABLE 1. Comparison of Quantitative Answers for Pre and Post Test

No.	Question	Pre-test (n=34)	Post-test (n=36)
Q 3	DTCs can play a role to contain antimicrobial resistance (AMR)	% who said True	
		85%	100%
Q 5	A formulary is a list of drugs approved for use in the health care system by authorized prescribers	76.5%	94%
Q 6	Prescribing indicators cannot be used to identify problems in drug use	26.5%	17%
Q 7	Do you know how to use information resources to evaluate the efficacy, safety and quality of a drug	38%	100%
Q 9	Can a DTC play an important advisory role in assuring procurement of drugs of appropriate quality?	94%	94%
Q 14	Can an algorithm be used to detect the causality of an adverse drug reaction?	80%	80.5%

TABLE 2: Comparison of Qualitative Responses for Pre and Post Test

Q1. What is the structure of a drug and therapeutics committees (DTCs)? Who are the members?

PRE-TEST (Before Training Course) n = 34	POST-TEST (After Training Course) n = 36
Structure of DTC	
All departments in medical care system	
National, regional and organizational committees (2)	
Structure of a DTC is a commission in charge of selection of drugs and making guidelines of drug use	Structure of a DTC is a commission in charge of selection of drugs and making guidelines of drug use; DTC will oversee use of drugs (2)
Representatives/Heads from all departments (5)	Representatives/Heads from all departments (5)
Chairman, secretary & committee members (3)	Chairman, secretary (4)
Composition of DTC	
Pharmacists (17)	Pharmacists (24)
Doctors (16)	Doctors (21)
Nurses (11)	**Nurses (23)**
Procurement Representative	**Procurement Representative (13)**
Administration (2)	**Administration (15)**
Lab Technicians	Lab Technicians (4)
Clinicians (3)	Financial Controller (3)
Pharmacy Managers (2)	Pharmacy Manager (2)
Department representatives (2)	Department representatives (2)
	Director of Hospital

Q 2: List important functions of a DTC

PRE-TEST (Before Training Course) n = 34	POST-TEST (After Training Course) n = 36
Develop a formulary list in a hospital (4)	**Develop a formulary list in a hospital (15)**
Monitor adherence to formulary	Monitor adherence to formulary (3)
	Management of Formulary (3) Role in procurement (2)
Making a list of drugs (5)	Making list of drugs (6)
Develop list of important drugs based on EDL	Develop list of important drugs based on EDL (2) Implement use of generic drugs
Assess drug efficacy (4)	Assess drug efficacy (2)
Assess cost-effectiveness of drugs (3)	Assess cost-effectiveness of drugs (2)
Training of DTC members (3)	Training all health professionals
Planning for DTCs; proper functioning in respective areas	
Guidelines for drug management (3) Drug selection (2) Reduce unnecessary stock of drugs Appropriate storage Appropriate procurement (4) Policies for drug use	Guidelines for drug management **Drug selection (9)** Policies for drug use Appropriate procurement (2)
Drug use evaluation (12) Promote rational drug use Reduce medication errors Monitor side-effects (2)	**Drug use evaluation (16)** **Promote rational drug use (7)** Reduce medication errors Assess drug safety
Make recommendations to improve drug use; control irrational drug use (2)	Make recommendations to improve drug use; control irrational drug use (3)
	Identify drug use problems (2)
	Drug safety management (3)
	Implement strategies to improve drug use (5)
Design/elaborate treatment guidelines (10)	Design/elaborate treatment guidelines (7) Distribute treatment guidelines
Update treatment guidelines (2)	
Monitoring adherence to guidelines (3)	
Source of good drug information (3)	
Educate & train prescribers on avoidance of antibiotic resistance	**Educate & train prescribers on avoidance of antibiotic resistance (6)**
Improve quality of care of patients	**Improve quality of care of patients (7)**

Q4. What kind of strategies can a DTC use to improve drug use when there are problems with overuse of antibiotics?

PRE-TEST (Before Training Course) n = 34	POST-TEST (After Training Course) n = 36
Establish guidelines for use of antibiotics to prevent resistance (4)	**Establish guidelines for use of antibiotics to prevent resistance (6)**
Ensure use of protocols/guidelines for specific/common diseases	Ensure use of protocols/guidelines for specific/common diseases (2)
Put drug control policies in place to ensure correct prescribing (5)	
Require a signature of selected prescribers for certain number of antibiotics	**Require a signature of selected prescribers for certain number of antibiotics (6)**
Regular training/education/sensitization for prescribers on the standards of rational antibiotic use (4)	**Regular training/education/sensitization for prescribers on the standards of rational antibiotic use (12)**
Meet with all prescribers and show trends in drug use; suggest new strategies for drug use (2) Coordination meeting	Discuss during DTC meeting; provide recommendations (2) Can conduct a workshop and present the evaluation results to find solutions together with prescribers Explain problems of bad prescriptions Use of antibiogram (2)
Reduce number of antibiotic molecules	Plan and allocate appropriately the scarce resources available for drugs (2) Advise choice of good antibiotics to administration Discuss with procurement
Implement appropriate formulary	Implement appropriate formulary
Assess prevalence of infectious diseases and then decide on which antibiotics are necessary (2)	Set criteria for administration of antibiotics
Monitor antibiotic consumption in terms of quantity, choice of doses and treatment duration	
Supervising antibiotic use	Assess use of antibiotics continuously
Monitor relevance of use of antibiotic based on criteria	**Perform drug use evaluation (6)**
Conduct surveys of antibiotic use (2)	

Monitor and evaluate antibiotic use in different health settings	
Research on antimicrobial resistance; sensitivity pattern of bacteria (2)	
Studies on drug use	Studies on drug use (4)
Define limits in use of antibiotics	Develop and implement STGs (2)
	Stop order
	ABC Analysis

Q. 8 What are the important factors to evaluate when adding a new drug to the formulary or Essential Drug List (EDL)?

PRE-TEST (Before Training Course) n = 34	POST-TEST (After Training Course) n = 36
Efficacy (17)	Efficacy (20)
Safety (2)	**Safety (14)**
Availability (7)	Availability (16)
Cost (11)	Cost (18)
Cost effectiveness (3)	Cost effectiveness (2)
Affordability (2	Affordability (5)
Side-effects (5)	Side effects (4)
Drug interaction (2)	
Need (2)	**Need (17)**
Quality (3)	**Quality (15)**
Adverse drug reaction (5)	
Tolerability	
Stability of storage	Storage
Easy route of administration	
	Evidence based information (3)
	Key decision makers must be involved in a participative discussion
Resistance (2)	

Q. 10 Name 3 reasons why patients do not take their medication regularly or correctly

PRE-TEST (Before Training Course) n = 34	POST-TEST (After Training Course) n = 36
Lack of right information for patients [i.e. health providers don't provide information; poor explanation] - (14)	**Lack of right information for patients [i.e. health providers don't provide information; poor explanation] - (21)**
Patient misperception; wrong belief; cultural norm; ignorance (9)	Patient misperception; wrong belief; cultural norm; ignorance (8)
Not able to read the instructions; illiterate (2)	Not able to read the instructions; illiterate (4)
Once symptoms get relieved, they give up taking drugs	Once symptoms get relieved, they give up taking drugs
Patient does not know the importance of taking medications regularly & correctly (3)	Patient does not know the importance of taking medications regularly & correctly (2)
Too many drugs – patient gets confused (5)	Too many drugs – patient gets confused (4)
Long duration of treatment (3)	Long duration of treatment
Side effects of drugs (6)	Side effects of drugs (8)
Taste of drugs (2)	
Interruption of supply/availability (3)	Interruption of supply/availability (2)
Poly pharmacy	Poly pharmacy (2)
High cost (3)	High cost (3)
Poor labeling	Poor labeling (1)
Route of administration (2)	
Drugs have to be taken at the specific time interval	Shortage of time of dispensing (2)
Self medication	Bad taste of drug
Lack of strict drug control in free market	Do not know the type of drugs given (2)
	Patients do not know why to take the medicine
Poverty (2)	

Q. 11 What are some consequences of using poor quality drugs at your hospital?

PRE-TEST (Before Training Course) n = 34	POST-TEST (After Training Course) n = 36
Resistance (19)	Resistance (14)
Patient loses trust/confidence in hospital (3)	**Patient loses trust/confidence in hospital (8)**
Therapeutic failure; reduces efficacy (7)	Therapeutic failure; reduces efficacy (7)
Economic impact to patients; loss of money (3)	Economic impact to patients; loss of money (8)
Increased adverse drug reaction	Increased adverse drug reaction (3)
Death (3)	Death (5)
Many side effects (2)	Many side effects (2)
Prolongation of hospitalization or hospital visits; prolongation of disease (8)	Prolongation of hospitalization or hospital visits; prolongation of disease (5)
Can create other diseases	
Poor treatment outcomes (2)	Poor treatment outcomes (5)
Delays in patient recovery (2)	Increased cost to hospital (5)
High expenditure	Poor quality of care
	Nosocomial infections

Q. 12 What is the difference between a counterfeit drug and a substandard drug?

PRE-TEST (Before Training Course) n = 34	POST-TEST (After Training Course) n = 36
Counterfeit drug • Illegal manufacturing and selling • Fraudulent copy of the original • No active ingredient (2) • Duplicate drug • Manufactured with no authorization • Associated with poor pharmaceutical quality • Active molecule does not correspond with the label • Manufactured illegally and not according to norms **Substandard drug** • Legal but poor quality • Very low bioavailability or no therapeutic value • Main active ingredient is in low concentration (3) • Contains less amount of active ingredient than what is stated in pharmacopoeia • Low dosage • Guidelines for drug presentation not respected • Not manufactured on required quality	**Counterfeit drug** • Drug manufactured by non-authorized factory (2) • No active ingredient (2) • Not of therapeutic value but bears logo of trade name • "different composition" • Forged drug that may have wrong label • Wrong drug imitation • Manufactured and sold illegally **Substandard drug** • Low dose compound • Dosage is less than the right dosage (2) • Made of poor quality • Low therapeutic content than expected • Less concentration of chemical composition • Less amount of active ingredient than recommended • Poor quality drug • Poorly manufactured and not according to GMP